~~Patent Claims~~

1. Thermal wave measuring method for contact-free measurement of geometrical and/or thermal features of a layer structure, whereby a modulatable heat source is driven with different frequencies and the layer structure is periodically heated, infrared radiation emitted by the layer structure and correspondingly modulated in intensity is received and is respectively evaluated as function of a drive frequency on the basis of amplitude and/or phase, whereby the heat source is simultaneously amplitude-modulated with at least two, predetermined, discrete frequencies, and the infrared radiation emitted by the layer structure is simultaneously interpreted corresponding to the drive frequencies.

2. Method according to claim 1, wherein a laser or, respectively, a laser diode or a light-emitting diode (LED) is employed as heat source.

3. Method according to one of the preceding claims, wherein the discrete frequency parts of the drive frequencies are adapted to a measurement problem.

4. Method according to claim 1 or 2, wherein the predetermined frequencies are detected with a lock-in evaluation.

5. Method according to claim 1, 2 or 3, wherein a fast Fourier transformation (FFT) is provided for the evaluation of the individual frequencies.

6. Method according to claim 4 or 5, wherein a farther-reaching evaluation occurs on the basis of a regression analysis or with a neural network.

7. Method according to one of the preceding claims, wherein the method is calibrated to a specific layer structure with calibration both my means of mathematically specific, theoretical values as well as by experimentally supported data.

8. Method according to one of the preceding claims for determining geometrical features given known thermal features or thermal features given known geometrical features of the layer structure.